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Ephemeris for Physical Observations

Greenwich Noon.	Angle of Position of ♃'s Axis. P	L−O.	Diff.	B	Annual Parallax. A−L.	Apparent Diameter. Equat.	Apparent Diameter. Phase.	Apparent Diameter. Polar.
1892.	°	°		°	°	″	″	″
May 21	335·634	239·669	403	+2·503	−8·438	34·76	0·19	32·53
23	335·684	240·072	398	2·520	8·658	34·90	·20	32·66
25	335·734	240·470	393	2·536	8·872	35·04	·21	32·79
27	335·785	240·863	386	2·553	9·081	35·19	·22	32·93
29	335·836	241·249	380	2·569	9·283	35·34	·23	33·07
31	335·887	241·629	374	+2·585	−9·480	35·49	0·24	33·22
June 2	335·939	242·003	367	2·601	9·670	35·65	·25	33·37
4	335·991	242·370	361	2·617	9·854	35·82	·26	33·52
6	336·042	242·731	354	2·633	10·032	35·99	·28	33·68
8	·093	243·085	347	2·648	10·202	36·16	·29	33·84
10	·144	243·432	340	+2·664	−10·366	36·34	0·30	34·01
12	·195	243·772	333	2·680	10·522	36·53	·31	34·18
14	·246	244·105	325	2·695	10·671	36·72	·32	34·36
16	·296	244·430	317	2·710	10·812	36·91	·33	34·54
18	·346	244·747	309	2·725	10·946	37·11	·34	34·72
20	·395	245·056	301	+2·740	−11·072	37·31	0·35	34·91
22	·444	245·357	292	2·755	11·189	37·51	·36	35·11
24	·492	245·649	283	2·770	11·297	37·73	·37	35·31
26	·538	245·932	274	2·785	11·397	37·94	·37	35·51
28	·584	246·206	265	2·800	11·488	38·16	·38	35·71
30	·629	246·471	255	+2·814	−11·569	38·38	0·39	35·92
July 2	·673	246·726	246	2·828	11·641	38·61	·40	36·13
4	·715	246·972	236	2·842	11·703	38·84	·40	36·35
6	·756	247·208	226	2·856	11·756	39·08	·41	36·57
8	·796	247·434	216	2·870	11·798	39·32	·42	36·80
10	·834	247·650	205	+2·883	−11·830	39·56	0·42	37·02
12	·871	247·855	195	2·896	11·851	39·81	·42	37·25
14	·906	248·050	183	2·909	11·862	40·06	·43	37·49
16	·940	248·233	172	2·922	11·862	40·31	·43	37·73
18	336·972	248·405	160	2·935	11·850	40·57	·43	37·97
20	337·001	248·565	149	+2·948	−11·827	40·83	0·43	38·21
22	·029	248·714	137	2·960	11·792	41·09	·43	38·45
24	·055	248·851	125	2·972	11·746	41·36	·43	38·70
26	·079	248·976	113	2·984	11·687	41·62	·43	38·95
28	·100	249·089	100	2·995	11·616	41·89	·43	39·21
30	337·119	249·189		+3·006	−11·533	42·07	0·43	39·46

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of Jupiter, 1892. By. A. Marth.

Greenwich Noon.	Longitude of ♃'s Central Meridian (877°·90) I.	(870°·27) II.	Corr. for Phase.	Light-time.	A−O.	*B*
1892.	°	°	°	m	°	°
May 21	340·93	334·58	+0·31	46·586	231·2345	+2·3953
23	296·44	274·82	·33	46·402	231·4180	2·4015
25	251·96	215·08	·34	46·213	231·6014	2·4076
27	207 48	155·35	·36	46·020	231·7849	2·4137
29	163·02	95·62	·38	45·823	231·9684	2·4197
31	118·56	35·90	+0·39	45·621	232·1519	+2·4257
June 2	74·11	336·19	·41	45·415	232·3354	2·4317
4	29·67	276·49	·42	45 205	232·5189	2·4377
6	345·24	216·80	·44	44·991	232·7024	2·4436
8	300·82	157·12	·45	44·774	232·8859	2·4496
10	256·41	97·44	+0·47	44·553	233·0694	+2·4555
12	212·00	37·78	·48	44·329	233·2529	2·4614
14	167·61	338·12	·50	44·102	233·4364	2·4673
16	123·23	278·48	·51	43·871	233·6199	2·4731
18	78·85	218·84	·52	43·638	233·8035	2·4789
20	34·49	159·21	+0·53	43·402	233 9870	+2·4846
22	350·13	99·60	·54	43·163	234·1705	2·4904
24	305·79	39·99	·55	42·922	234·3541	2·4961
26	261·45	340·39	·56	42·678	234·5377	2·5018
28	217·13	280·81	·57	42·433	234·7212	2·5075
30	172·81	221·23	+0·58	42·185	234·9048	+2·5132
July 2	128·51	161·67	·59	41·936	235·0884	2·5188
4	84·21	102·11	·60	41 686	235·2719	2·5244
6	39·93	42·57	·60	41·435	235·4555	2·5300
8	355·66	343·04	·61	41·182	235·6391	2·5355
10	311·40	283·51	+0·61	40 929	235·8227	+2·5410
12	267·15	224·00	·61	40·675	236·0063	2·5465
14	222·91	164·50	·61	40·421	236·1899	2·5520
16	178·68	105·01	·61	40·167	236 3735	2·5574
18	134·46	45·53	·61	39·913	236 5571	2·5628
20	90·26	346·07	+0·61	39·659	236·7407	+2·5682
22	46·06	286·61	·60	39·405	236·9243	2·5736
24	1·88	227·17	·60	39·153	237·1079	2·5790
26	317 71	167·73	·59	38·901	237 2915	2·5843
28	273·55	108·31	·59	38·651	237·4751	2·5896
30	229·40	48·90	+0·58	38·403	237 6587	+2·5948

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The angle L − O + 180° is the jovicentric longitude of the Earth, reckoned in the assumed plane of *Jupiter's* equator from O, the point of the vernal equinox of *Jupiter's* northern hemisphere or the point of the descending node of the planet's equator on its orbit. B denotes the jovicentric latitude of the latitude of the Earth above *Jupiter's* equator. The annual parallax Λ—L is the difference between the jovicentric longitudes of the Sun and Earth. For the computation of the apparent diameters I have adopted the values deduced by Schur (*Astr. Nachr.*, vol. 129, p. 14) from his measurements made with the new Göttingen heliometer about the time of the last opposition. It were much to be desired that the several powerful heliometers now available should be employed about the time of the next opposition, while the phase is practically insensible, for measuring the equatorial and polar diameter of the planet, so that their united testimony might indicate the values, which are likely to come nearest to the true ones.

The two values of the "Longitude of ♃'s Central Meridian" given for each date are computed with the same rates of rotation as in the ephemerides for some preceding years; but as the motion of the great spot has again been slackening during the last season, I have restored in "System II." the zero-meridian to the place adopted in the Ephemeris for 1890, from which it was put back 10° in the Ephemeris for 1891, so that the longitudes of the spot computed from the data for the last apparition must be diminished 10°, in order to conform with the computed longitudes of 1890 and with those of the present Ephemeris. The "System I." of longitudes has been continued unaltered, as Mr. A. Stanley Williams' observations of a number of equatorial spots, which he has kindly communicated, render any alteration for the present undesirable.

The addition of the "correction for phase" to the longitudes of the central meridian gives the longitudes of the meridian which bisects the illuminated disc. The following is a list of Greenwich mean times, when the zero-meridian in the assumed two systems of longitudes will pass the middle of the illuminated disc:—

	I.	II.		I.	II.
	(877°·90)	(870°·27)		(877°·90)	(870°·27)
1892.	h m	h m	1892.	h m	h m
May 21	10 21·4	10 37·3	24	7 15·5	8 7·7
	20 12·0	20 33·1		17 6·1	18 3·5
22	15 53·1	16 24·6	25	12 47·3	13 55·0
23	11 34·3	12 16·2		22 37·9	23 50·8
	15 36·0 ∓ occultation of ∗73 Piscium. *V.* note at end of list.		26	8 28·4	9 46·6
				18 19·0	19 42·3
			27	14 0·2	15 33·8
	21 24·9	22 12·0	28	9 41·4	11 25·4

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	I.	II.		I.	II.
	(877°90)	(870°27)		(877°90)	(870°28)
1892.	h m	h m	1892.	h m	h m
	19 31·9	21 21·1		21 49·8	17 57·0
29	5 22·5	7 16·9	18	7 39·3	13 48·5
	15 33·1	17 12·6		17 30·9	23 44·2
30	10 54·3	13 4·2	19	13 12·0	9 39·9
	20 44·9	22 59·9		23 2·6	19 35·7
31	6 35·4	8 55·7	20	8 53·1	5 31·4
	16 26·0	18 51·4		18 43·7	15 27·1
June 1	12 7·2	14 43·0	21	14 24·8	11 18·6
2	7 48·3	10 34·5		24 15·3	21 14·3
	17 38·9	20 30·2	22	10 5·9	7 10·0
3	13 20·1	6 26·0		19 56·4	17 5·8
	23 10·6	16 21·7	23	5 46·9	12 57·2
4	9 1·2	12 13·2		15 37·5	22 52·9
	18 51·8	22 9·0	24	11 18·6	8 48·6
5	14 32·9	18 0·5		21 9·1	18 44·4
6	10 14·1	13 52·0	25	6 59·7	14 35·8
	20 4·6	23 47·7		16 50·2	24 31·5
7	5 55·2	9 43·5	26	12 31·3	10 27·2
	15 45·8	19 39·2		22 21·8	20 23·0
8	11 26·9	5 35·0	June 27	8 12·4	6 18·7
	21 17·5	15 30·7		18 2·9	16 14·4
9	7 8·0	11 22·2	28	13 44·0	12 5·8
	16 58·6	21 18·0		23 34·5	22 1·5
10	12 39·7	7 13·7	29	9 25·0	7 57·2
	22 30·3	17 9·5		19 15·6	17 52·9
11	8 20·9	13 0·9	30	14 56·6	13 44·4
	18 11·4	22 56·7		24 47·2	23 40·1
12	13 52·5	8 52·4	July 1	10 37·7	9 35·8
	23 43·1	18 48·2		20 28·2	19 31·5
13	9 33·7	14 39·6	2	6 18·8	5 27·2
	19 24·2	24 35·4		16 9·3	15 22·9
14	15 5·3	10 31·1	3	11 50·4	11 14·3
	24 55·9	20 26·9		21 40·9	21 10·0
15	10 46·5	6 22·6	4	7 31·4	7 5·8
	20 37·0	16 18·3		17 21·9	17 1·5
16	6 27·6	12 9·8	5	13 3·0	12 52·9
	16 18·1	22 5·5		22 53·5	22 48·6
17	11 59·2	8 1·3	6	8 44·0	8 44·3

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	I.	II.		I.	II.
	(877°90)	(870°27)		(877°90)	(870°28)
1892.	h m	h m	1892	h m	h m
	18 34·6	18 40·0	19	11 40·4	4 30·7
7	14 15·6	14 31·4		21 30·9	14 26·4
8	0 6·1	0 27·1	20	7 21·4	10 17·7
	9 56·6	10 22·8		17 11·9	20 13·4
	19 47·2	20 18·5	21	12 52·9	6 9·1
9	5 37·7	6 14·2		22 43·4	16 4·8
	15 28·2	16 9·9	22	8 33·9	11 56·1
10	11 9·2	12 1·3		18 24·4	21 51·8
	20 59·8	11 56·9	23	4 14·9	7 47·5
11	6 50·3	7 52·6		14 5·4	17 43·1
	16 40·8	17 48·3	24	9 46·4	13 34·5
12	12 21·8	13 39·7		19 36·9	23 30·1
	22 12·3	23 35·4	25	5 27·4	9 25·8
13	8 2·8	9 31·1		15 17·9	19 21·5
	17 53·4	19 26·8	26	10 58·9	5 17·2
14	13 34·4	5 22·5		20 49·4	15 12·8
	23 24·9	15 18·2	27	6 39·9	11 4·2
15	9 15·4	11 9·5		16 30·3	20 59·8
	19 5·9	21 5·2	28	12 11·3	6 55·5
16	4 56·4	7 0·9		22 1·8	16 51·1
	14 46·9	16 56·6	29	7 52·3	12 42·5
17	10 27·9	12 48·0		17 42·8	22 38·1
	20 18·4	22 43·6	30	3 33·3	8 33·8
18	6 8·9	8 39·3		13 23·7	18 29·4
	15 59·4	18 35·0	31	9 4·7	4 25·1

(*To be continued.*)

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Note on the Occultation of the Star 73 Piscium $6^{m}\cdot4$ *by Jupiter on 1892 May* 23. By A. Marth.

Assuming the apparent place of the star, as derived from the Greenwich Ten-Year Catalogue for 1880, to be α $0^{h}\ 59^{m}\ 16^{s}\cdot29$ $\delta+5^{\circ}\ 4'\ 36''\cdot8$, and referring it to the *Nautical Almanac* places of *Jupiter*, the rectangular co-ordinates of the star $x=s\sin(p-P)$ and $y=s\cos(p-P)$ referred to the axes of the disc of *Jupiter* and corrected for parallax will be

May 23. G.M.T.		$x=+0''\cdot651\,\rho_{,}+$		$y=+1''\cdot442\,\rho_{,}+$	
h	m	$''$	$''\ \ ^{\circ}$	$''$	$''\ \ ^{\circ}$
14	0	$+49\cdot23$	$-1\cdot448\,\rho'\cos(\lambda-14\cdot96)$	$+12\cdot33$	$+0\cdot666\,\rho'\cos(\lambda-1\cdot60)$
	20	$39\cdot26$	$-9\cdot95$	$12\cdot75$	$+3\cdot41$
	40	$29\cdot29$	$-4\cdot93$	$13\cdot16$	$8\cdot42$
15	0	$19\cdot33$	$+0\cdot08$	$13\cdot57$	$13\cdot44$
	20	$+9\cdot36$	$5\cdot09$	$13\cdot98$	$18\cdot45$
	40	$-0\cdot60$	$-1\cdot448\,\rho'\cos(\lambda+10\cdot10)$	$+14\cdot40$	$+0\cdot666\,\rho'\cos(\lambda+23\cdot46)$
16	0	$10\cdot56$	$15\cdot11$	$14\cdot81$	$28\cdot48$
	20	$20\cdot52$	$20\cdot12$	$15\cdot22$	$33\cdot49$
	40	$30\cdot48$	$25\cdot13$	$15\cdot63$	$38\cdot50$
17	0	$-40\cdot44$	$30\cdot14$	$16\cdot04$	$43\cdot52$
	20	$-50\cdot39$	$-1\cdot448\,\rho'\cos(\lambda+35\cdot15)$	$+16\cdot45$	$+0\cdot666\,\rho'\cos(\lambda+48\cdot53)$

where λ denotes the longitude, east of Greenwich, of the place of observing, and $\rho_{,}$ and ρ' its distances from the plane of the equator and from the axis of the Earth.

The occultation of the star takes place so near the northern limb that any small error of the differences of declination will alter the times of the star's disappearance, and affects reappearance to such a degree as to render any prediction untrustworthy. Nevertheless, the knowledge of the times of the middle of the occultation and of its semiduration, though computed on the assumption of the correctness of the tabular values, may be of service, and these times are therefore given for a few observatories.

	Middle of Occultation. G.M.T.	Local M.T.	Semi-duration.
	h m	h m	m
Cape	15 34·7	16 42·6	∓ 18·5
Algiers	35·9	15 48·1	10·0
Madrid	36·0	15 21·1	9·5
Nice	36·3	16 5·5	9·4
Paris	36·5	15 45·8	8·8
Greenwich ...	36·6	15 36·6	8·6
Dublin	15 36·7	15 11·3	8·4